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Application No. 10/082,603

REMARKS

Claims 1-20 are pending. By this Amendment, claims 1, 9, 16, and 18 are amended.

Applicants have amended independent claims 1, 9, 16, and 18 to more particularly point out their claimed invention. The amendments are supported by the specification, for example, at page 12, lines 1-12. The amendments are not intended to narrow the claims. No new matter is introduced.

All of the pending claims stand rejected. Applicants respectfully request reconsideration of the rejections based on the following analysis.

Rejection under 35 U.S.C. § 112, First Paragraph

The Examiner rejected claims 1, 9, and 16 under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. Specifically, the Examiner indicated that no portion of the specification discloses the claimed method of controlling the optical path length "to within three nanometers."

Although Applicants do not acquiesce in the Examiner's position, claims 1, 9, and 16 have been amended. The amendments of claims 1, 9, and 16 are supported by the specification, for example, at page 12, line 1-12. Thus, claims 1, 9, and 16 satisfy the written description requirement. Applicants respectfully request withdrawal of the rejection of claims 1, 9, and 16 under 35 U.S.C. § 112, first paragraph, for lack of written description.

Rejection Over Yamada in view of Chen

The Examiner rejected claims 1-2, 4, 6-10, 12, and 14-16 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No 5,940,548 to Yamada et al. (Yamada) in view of U.S. Patent No. 6,356,681 to Chen et al. (Chen). Applicants incorporate by reference their

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comments from the January 3, 2005 Amendment and respectfully request reconsideration of the rejection in view of the following comments.

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." MPEP § 2142 (citing In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

With respect to claims 1, 9, and 16, the Examiner has not established a prima facie case of obviousness of Applicants' claimed invention over Yamada in view of Chen since the Examiner has not provided any suggestion or motivation to combine the teachings of Yamada and Chen. Moreover, even if there were sufficient suggestion or motivation to combine the references, the references do not teach or suggest all of the features included in claims 1, 9, and 16.

The motivation or suggestion to modify the teachings of a reference must be either explicitly or implicitly in the references or knowledge "generally available to one of ordinary skill in the art." See MPEP § 2143.01. Furthermore, "[t]he test for an implicit showing [of motivation] is what the combined teachings, knowledge of one of ordinary skill in the art, and nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." See MPEP §2143.01 (quoting In re Kotzab, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)).

The devices disclosed in Yamada are directed towards guided-wave circuits with optical characteristic adjustment plates. The Examiner cited Yamada for disclosing measuring a respective phase error of a plurality of waveguide cores of an arrayed waveguide grating and

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adjusting a respective optical path length of the cores in accordance with the respective phase error of the cores by adjusting a respective refracting index of the cores, thereby optimizing a filter response of the arrayed waveguide grating. Yamada does not teach or suggest **controlling an optical path length to less than ten nanometers**, as required by claims 1, 9, and 16. The Examiner has cited Chen for support for the precision of the optical path length adjustment with respect to the method as disclosed in Yamada.

However, Chen is generally directed towards tuning fibers used in fiber optic devices by pulsing a source of heat on a fiber adjacent a fiber grating to physically change the length of the entire fiber (both core and cladding) upon heating with tension on the fiber. See, e.g., col. 1, lines 55-62. The method of heating as taught in Chen would not be functional for use in the Yamada device, *i.e.*, a guided-wave circuit, as the physical change taught in Chen applies not only to the fiber core, but rather to the entire fiber (both core and cladding). Such a physical change would not be appropriate with a guided-wave circuit of Yamada since the optical length of the individual fibers could not be changed relative to each other. As such, the combination suggested by the Examiner is inoperable with respect to waveguide gratings.

In addition, Chen discloses diffusing dopants from the fiber cores toward the cladding to lower the refractive index and shorten the optical path (see, e.g., col. 1, lines 63-67; col. 5, lines 55-61). However, there is no teaching in Yamada of diffusing of dopants to or from the waveguide to change the refractive index of the waveguide. Thus, there would have been no motivation to substitute the Chen method, or the mechanics of diffusion, into the Yamada method, which does not contemplate any dopant diffusion.

Moreover, even if there were sufficient suggestion or motivation to combine the references, which there is not, the Examiner has not established a prima facie case of obviousness of Applicants' claimed invention since the references do not teach or suggest all of the features included in claims 1, 9, and 16. Prima facie obviousness is not established if all the

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elements of the rejected claim are not disclosed or suggested in the cited art. In re Ochiai, 37 USPQ 1127, 1131 (Fed. Cir. 1995). ("The test for obviousness *vel non* is statutory. It requires that one compare the claim's 'subject matter as a whole' with the prior art 'to which said subject matter pertains.'"). See also, MPEP § 2143.03 "All Claim Limitations Must Be Taught or Suggested," citing In re Royka, 180 USPQ 580 (CCPA 1974). "To establish prima facie obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art." MPEP § 2143.03.

Neither Yamada nor Chen teach or suggest an arrayed waveguide grating with the claimed precision in the optical path length. Specifically, claims 1, 9, and 16, as amended, require that the optical path length of the waveguide cores be adjusted by adjusting a respective refracting index of the waveguide cores, wherein the optical path length is controlled to less than ten nanometers. Yamada does not teach or suggest control adjusting the optical path length, or the refractive index, to any specific precision. Chen does not make up for this deficiency. The Examiner stated that Chen discloses a method of controlling the optical path length of a waveguide via laser to within three nanometers. However, for the reasons previously discussed, Chen does not teach or suggest adjusting the optical path length of a waveguide core, but rather the physical length of an entire fiber (core and cladding) adjacent a fiber grating. Therefore, the combined disclosures of Yamada and Chen do not teach or suggest all of the features included in claims 1, 9, and 16.

With respect to specific features noted by the Examiner in the claims depending from claims 1, 9, and 16, these issues are not commented on further here because they are presently moot given the above analysis, although Applicants do not acquiesce in the Examiner's position. See MPEP § 2143.03 ("If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.") With respect to the Examiner's official notice, Applicants assert that the subject matter of the official notices are clearly not so well

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known in the art to motivate the combinations in the assertions of the Examiner without documentary support. As such, Applicants respectfully request withdrawal of the rejection of claims 1-2, 4, 6-10, 12, and 14-16 as being unpatentable over Yamada in view of Chen.

Rejection Over Yamada in view of Dugan

The Examiner rejected claims 18-20 under 35 U.S.C. § 103(a) as being unpatentable over Yamada in view of U.S. Patent Application Publication No. 2003/0035640 to Dugan et al. (Dugan). Applicants have amended independent claim 18 to more particularly point out Applicants' claimed invention. Applicants respectfully request reconsideration of the rejection in view of the following comments.

With respect to claim 18, neither Yamada nor Dugan disclose or suggest adjusting the "refractive index [of the cores] using pulsed laser energy with the number of pulses selected to yield a controlled adjustment of the optical path length to less than ten nanometers," as required by amended claim 18. More specifically, neither Yamada nor Dugan teach or suggest adjusting the optical path length, or the refractive index, to any quantifiable precision. Thus, the combined teachings of the cited references do not render Applicants' claimed invention prima facie obvious.

With respect to specific features noted by the Examiner in the claims depending from claim 18, these issues are not commented on further here because they are presently moot given the above analysis, although Applicants do not acquiesce in the Examiner's position. As such, Applicants respectfully request withdrawal of the rejection of claims 18-20 as being unpatentable over Yamada in view of Dugan.

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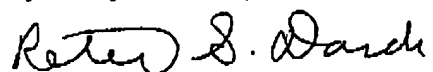
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Conclusions

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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